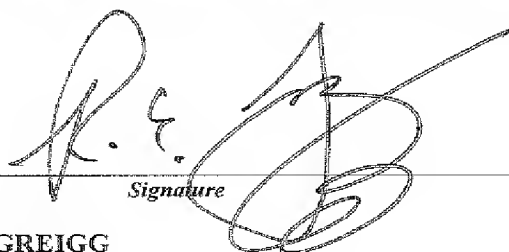


TRANSMITTAL OF APPEAL BRIEF (Large Entity)Docket No.
R.307341In Re Application Of: **Armin MERZ et al.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/586,871	July 21, 2006	K. Coleman	02119	3747	1552

Invention: **High-Pressure Pump, In Particular For A Fuel Injection System Of An Internal Combustion Engine****COMMISSIONER FOR PATENTS:**Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:
May 5, 2009The fee for filing this Appeal Brief is: **\$540.00**

- ☐ A check in the amount of the fee is enclosed.
- ☐ The Director has already been authorized to charge fees in this application to a Deposit Account.
- ☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **07-2100**. I have enclosed a duplicate copy of this sheet.
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SignatureDated: **06 JULY 2009****RONALD E. GREIGG**
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re patent application of

Armin MERZ et al.

Before the Board of Appeals

Serial No. 10/586,871

Art Unit: 3747

Filed: July 21, 2006

Examiner: K. Coleman

For: HIGH-PRESSURE PUMP, IN PARTICULAR FOR A FUEL INJECTION SYSTEM
OF AN INTERNAL COMBUSTION ENGINE

APPELLANT'S BRIEF (37 CFR 41.37)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: July 6, 2009

Sir:

This Brief is filed in support of the Notice of Appeal filed on May 5, 2009, appealing the Examiner's decision of making final a rejection of claims 9-28.

The \$540 fee for this Appeal Brief and any other required fee should be charged to Deposit Account No. 07-2100 by the attached deposit account form.

Appl. No. 10/586,871
Appellant's Brief dated July 6, 2009
In support of Appeal filed May 5, 2009

I - REAL PARTY IN INTEREST

The real party in interest in this appeal is:

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II - RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, there are no such appeals or interferences. None

III - STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION - Twenty (20)

Claims in the application are: 9-28.

B. STATUS OF ALL THE CLAIMS

1. Claims canceled: 1-8.
2. Claims withdrawn from consideration but not canceled: None.
3. Claims pending: 9-28.
4. Claims allowed: None.
5. Claims rejected: 9-28.

C. CLAIMS ON APPEAL

The claims on appeal are: 9-28.

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IV - STATUS OF AMENDMENTS

An amendment was filed on April 6, 2009, after the final rejection. An Advisory Office action was mailed on April 16, 2009, refusing entry of the after-final amendment. Thus, no changes have been made to the claims that were finally rejected and the last entered amendment containing the claims on appeal is the amendment filed on September 22, 2008.

V - SUMMARY OF CLAIMED SUBJECT MATTER

In the following summary, all references to pages and lines can be found in the original English-language specification filed on July 21, 2006. However, it should be noted that the original English-language specification contained a number of minor errors that were corrected by the preliminary amendment also filed on July 21, 2006. The references to pages and lines in the following summary are intended as examples of where the claim language may be found in the specification and are not intended to be exclusive.

Claim 9, the only independent claim on appeal, is directed to a high-pressure pump for a fuel injection system of an internal combustion engine (p. 1, ll. 4-6), the pump comprising:

a housing 10 (p. 3, l. 11) with at least one pump element 18 (p. 4, l. 3) including a pump piston 20 (p. 4, l. 4) driven into a stroke motion by a drive shaft 12 (p. 4, ll. 2-6);

the pump piston being guided so that it can slide in a cylinder bore 28 of a housing part 22 and delimiting a pumping chamber 30 therein (p. 4, ll. 11-14);

a support element 40 supporting the pump piston against the drive shaft (p. 5, ll. 1, 2);

a prestressed return spring 60 acting on both the pump piston and the support element in the direction toward the drive shaft (p. 6, ll. 12-19),

a receptacle 46 contained in the same housing 22 part that contains the cylinder bore 28, the support element 40 being guided so that it can slide in the receptacle 46 in the direction of the longitudinal axis of the pump piston, but cannot rotate around the longitudinal axis (p. 7, ll. 3-11 and p. 5, ll. 20-22).

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VI - GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 9-28 stand rejected under 35 U.S.C. 102(b) as anticipated by Kovacs et al (US 4,008,009).

VII - ARGUMENTS

The rejection of claims 9-28 as anticipated by Kovacs et al

Arguments applicable to claims 9-28

Claim 9 is directed to high-pressure pump for a fuel injection system of an internal combustion engine and requires a pump housing with at least one pump element including a pump piston driven into a stroke motion by a drive shaft; the pump piston being guided so that it can slide in a cylinder bore of a housing part and delimiting a pumping chamber therein; a support element supporting the pump piston against the drive shaft; a prestressed return spring acting on both the pump piston and the support element in the direction toward the drive shaft,

a receptacle contained in the same housing part that contains the cylinder bore, the support element being guided so that it can slide in the receptacle in the direction of the longitudinal axis of the pump piston, but cannot rotate around the longitudinal axis.

The language emphasized above is illustrated in appellants's drawings. For example, Figs. 1 and 2, show a pump having a multi-part housing 10, including a base body 14 supporting a drive shaft 12. The base body itself may be formed from several parts (see, spec., paragraph 15). The multi-part housing 10 also includes a housing part 22 formed with an extension 26 that contains a cylinder bore 28. A pump piston 20 slides within the cylinder bore 28. Spec., paragraph 16.

A support element 40 is situated between the pump piston 20 and a cam 16 of the drive shaft 12. On its side oriented toward the cam 16, the support element 40 has a concave

recess 42 in which a cylindrical roller 44 is supported in rotary fashion. The rotation axis 45 of the roller 44 is at least approximately parallel to the rotation axis 13 of the drive shaft 12 and the roller 44 rolls against the cam 16 of the drive shaft 12. The support element 40 is guided so that it can slide in a receptacle 46 of the housing part 22 (see, Fig. 2) in the direction of the stroke motion of the pump piston 20, i.e. along its longitudinal axis 21. Spec., paragraph 17.

Kovacs et al teaches a fuel injection pump having a multi-part housing including a body 11 and a cap 13. In Kovacs, only the bore 25, in which the tappet 46 is guided, is embodied in the housing body 11. The bore 30, in which the pump piston 35 is guided, is not embodied in the housing body 11 itself, but rather in a sleeve 29 inserted into the housing body 11. This is indicated in column 2, lines 36 through 38 of Kovacs. The bore 25 forming the guide for the tappet 46 and the bore 30 of the pump piston 35 in Kovacs are thus not contained in the same housing part, as required by claim 9. Thus, the same problems exist in Kovacs as are explained in appellants' specification with regard to the prior art (see, spec., p. 1, l. 19 through p. 2, l. 5), since the exact alignment of the guide bore 25 for the tappet 46 and of the cylinder bore 30 is difficult.

Moreover, in Kovacs the guide of the tappet 46 is a bore 25, which unless otherwise recited is round and, thus, cannot guide the tappet 46 nonrotatably as required by claim 9.

To support a rejection of a claim under 35 U.S.C. 102(b), it must be shown that each element of the claim is found, either expressly described or under principles of inherency, in

a single prior art reference. See Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

Kovacs et al fails to teach a high-pressure pump of the type recited in claim 9, which includes a cylinder bore and a receptacle contained in the same housing part that contains the cylinder bore. Further, Kovacs et al fails to teach a high-pressure pump of the type recited in claim 9, that includes a support element supporting a pump piston against a drive shaft, which support element is guided so that it can slide in a receptacle in the direction of the longitudinal axis of the pump piston, but cannot rotate around the longitudinal axis. Thus, Kovacs et al does not anticipate claim 9 or any of the claims dependent on claim 9.

Arguments applicable to claims 10, 12, 14, 17, 21 and 25

Claim 10 is dependent on claim 9. Claims 12, 14, 17, 21 and 25 depend directly or ultimately from claim 10.

In addition to the elements recited in claim 9, claim 10 further requires that an end of the cylinder bore oriented toward the drive shaft terminate at a plane containing a wall of the receptacle.

As seen in appellants' Fig. 2, the claimed receptacle 46 has an end wall (the top wall of the receptacle 46, as seen in Fig. 2) which is coplanar with the end of the cylinder bore 28 oriented towards the drive shaft, i.e., the end of the cylinder bore closest to or facing the drive shaft 12.

Regarding the language “an end of the cylinder bore oriented toward the drive shaft terminates at a plane containing a wall of the receptacle” in claim 10, the examiner reads the “support element supporting the pump piston against the drive shaft” on the ears 51 formed on the piston 35 (Final Rejection, page 2, lines 18, 19 and page 3, line 1) and the “receptacle” in which the support element is guided on the interior of control sleeve 38 (Final Rejection, page 2, lines 22, 23 and page, 3, line 2) and the examiner finds that Kovacs et al teaches “an end of the cylinder bore (29) oriented toward the drive shaft (50) terminates at a plane containing a wall of the receptacle (i.e. the interior of 29)” (Final Rejection, page, 3, lines 4-6).

Actually, the cylinder bore in Kovacs is element 30 - element 29 is not a bore, but a “barrel” containing “cylinder bore 30” (see Kovacs et al, col. 2, l. 37).

Further, the ears 51 formed on the piston 35 of Kovacs do not support the pump piston against the drive shaft as required by the language of claim 10. Therefore, it is improper for the examiner to read the “receptacle” on the interior of control sleeve 38.

At col 3, line 48 through col. 4, line 2, Kovacs teaches that:

In order to control the quantity of fuel being pumped, the piston 35 is adapted to be rotated relative to the barrel 29 to control the point of communication between the groove 36 of the piston and the groove 34 of the barrel. This is done by providing a pair of outwardly extending ears 51 on the piston 35 and such ears are retained within grooves 52 in the upper portion of the control sleeve 38. The control sleeve grooves are deep enough so that the ears 51 do not engage the bottom of the grooves during the entire stroke of the piston. A control rod 53 extends through the body 11 and through the lower reservoir 24 therein. A toothed rack 54 is adjustably mounted on the control rod in any desired manner, as by a set screw 55. The teeth of

the rack 54 mesh with the segmental gear 39 of the control sleeve so that back-and-forth movement of the control rod 53 causes partial rotation of the sleeve 38. Since the ears 51 of the piston are retained within the grooves 52 of the control sleeve, rotation of the control sleeve causes the piston 35 to rotate relative to the barrel 29 and vary the point where the groove 36 crosses and communicates with the groove 34.

It is clear from this teaching in Kovacs that the ears 51 simply key the piston 35 to the rotational position of the control sleeve 38, that is, as the control sleeve 38 is rotated by the control rod 53, the piston 35 rotates along with the control sleeve 38.

Attention is directed to the meaning of the word "support." The ordinary meaning of the word is "to keep from falling or sinking; bear the weight of; hold up; sustain" (The World Book Dictionary, 1987, p. 2106). The ears 51 do not **support** the pump piston **against** the drive shaft. This is a fact, because one could eliminate both the ears 51 and the control sleeve 38 in Kovacs' structure and the pump piston would still be supported against the drive shaft by the spring 41, the collar or spring seat 42 and the tappet 46.

In Kovacs, the element which actually **supports** the piston 35 **against** the drive shaft is the tappet 46 and the receptacle which guides the support element (tappet 46) is the bore 25. Thus, Kovacs does not teach that an end of the cylinder bore 30 oriented toward the drive shaft terminates at a plane containing a wall of the receptacle 25 as required by the language of claim 10. Hence, Kovacs does not anticipate claim 10 or any of the claims dependent from claim 10.

Arguments applicable to claims 11, 12, 15, 18, 22 and 26

Claim 11 is dependent on Claim 9. Claims 15, 18, 22 and 26 depend directly or ultimately on claim 11. Claim 12 is dependent on claim 10.

In addition to the elements recited in their respective parent claims, claims 11 and 12 further require that the receptacle be embodied in the form of at least one slot provided in the housing part. The antecedent for the language "the housing part" is found in the language "the pump piston being guided so that it can slide in a cylinder bore of a housing part" of claim 9 and is the same housing part that contains the receptacle for the support element.

In the embodiment illustrated in appellants' Figs. 2 and 3, the receptacle 46 for the support element 40 is embodied in the form of a slot in the extension 26 of the housing part 22. See, spec., paragraph 18.

In rejecting claims 11 and 12, the examiner reads the "receptacle" on the interior cavity of element 35. See, Final Rejection, p. 3.

It is pointed out that element 35 in Kovacs is described as a "piston" which is slidably mounted within the bore 30 of barrel 29 (col. 2, l. 53, 54).

As to the language "at least one slot provided in the housing part," the examiner points to the "the interior chamber of 29." See, Final Rejection, p. 3. It is unclear whether the examiner is reading the "at least one slot" or "the housing part" on "the interior chamber of 29."

Kovacs does teach a slot 52 in the control sleeve 38. See, Kovacs, Fig. 2. However, the slot 52 is not "the receptacle" for the support element 46. The receptacle for the support

element 46 in Kovacs is the bore 25 and the bore 25 is not in the form of at least one slot.

Thus, for this additional reason, Kovacs does not anticipate claims 11, 12, 15, 18, 22 and 26.

Arguments applicable to claims 13, 19, 23 and 27

Claim 13 is dependent on claim 9. Claims 19, 23 and 27 depend directly or ultimately on claim 13.

In addition to the elements recited in claim 9, claim 13 further requires that the support element be embodied as at least approximately rectangular in cross section.

Again, the examiner reads the claimed "support element" on the ears 51, but the ears 51 formed on the piston 35 of Kovacs do not support the pump piston against the drive shaft as required by the language of claim 9. Thus, it is improper for the examiner to read the claimed "support element" on the ears 51. The actual support element in Kovacs is the tappet 46. There is no teaching in Kovacs that the tappet 46 is embodied as at least approximately rectangular in cross section. Thus, Kovacs cannot possibly anticipate claims 13, 19, 23 and 27.

Arguments applicable to claims 16, 20 and 24

Claim 16 is dependent on claim 9. Claims 20 and 24 are dependent on claim 16. Claim 16 further requires that the housing part comprise an extension that is at least approximately cylindrical, is oriented toward the drive shaft, and contains the cylinder bore and the receptacle. The antecedent for the language "the housing part" is found in the

language “the pump piston being guided so that it can slide in a cylinder bore of a housing part” of claim 9 and is the same housing part that contains the receptacle for the support element.

The examiner reads the claimed “extension” on the collar or spring seat 42. Final Rejection, p. 3.

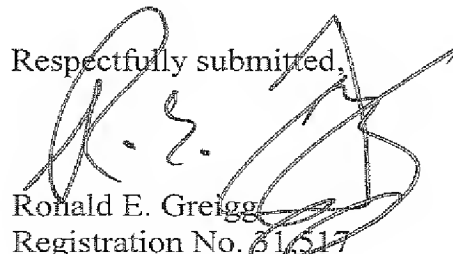
In Kovacs, the housing part that contains the receptacle or bore 25 for the support element or tappet 46 is the housing part 11. The collar or spring seat 42 is a separate element from the housing part 11. Thus, the housing part 11 of Kovacs does not comprise the collar or spring seat 42 as required by the language of claim 16. Thus, Kovacs cannot possibly anticipate claims 16, 20 and 24.

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Conclusion

For the reasons stated above, the appellants request that the Examiner's rejection of the claims be reversed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. E. Greigg', is written over the typed name and registration number.

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VIII - CLAIMS APPENDIX

Claims 1-8. **(Canceled)**

9. **(Rejected)** A high-pressure pump for a fuel injection system of an internal combustion engine, the pump comprising

a housing with at least one pump element including a pump piston driven into a stroke motion by a drive shaft;

the pump piston being guided so that it can slide in a cylinder bore of a housing part and delimiting a pumping chamber therein;

a support element supporting the pump piston against the drive shaft;

a prestressed return spring acting on both the pump piston and the support element in the direction toward the drive shaft,

a receptacle contained in the same housing part that contains the cylinder bore, the support element being guided so that it can slide in the receptacle in the direction of the longitudinal axis of the pump piston, but cannot rotate around the longitudinal axis.

10. **(Rejected)** The high-pressure pump according to claim 9, wherein an end of the cylinder bore oriented toward the drive shaft terminates at a plane containing a wall of the receptacle.

11. **(Rejected)** The high-pressure pump according to claim 9, wherein the receptacle is embodied in the form of at least one slot provided in the housing part.

12. **(Rejected)** The high-pressure pump according to claim 10, wherein the receptacle is embodied in the form of at least one slot provided in the housing part.

13. **(Rejected)** The high-pressure pump according to claim 9, wherein the support element is embodied as at least approximately rectangular in cross section.

14. **(Rejected)** The high-pressure pump according to claim 10, wherein the support element is embodied as at least approximately rectangular in cross section.

15. **(Rejected)** The high-pressure pump according to claim 11, wherein the support element is embodied as at least approximately rectangular in cross section.

16. **(Rejected)** The high-pressure pump according to claim 9, wherein the housing part comprises an extension that is at least approximately cylindrical, is oriented toward the drive shaft, and contains the cylinder bore and the receptacle.

17. **(Rejected)** The high-pressure pump according to claim 10, wherein the housing part comprises an extension that is at least approximately cylindrical, is oriented toward the drive shaft, and contains the cylinder bore and the receptacle.

18. **(Rejected)** The high-pressure pump according to claim 11, wherein the housing part comprises an extension that is at least approximately cylindrical, is oriented toward the drive shaft, and contains the cylinder bore and the receptacle.

19. **(Rejected)** The high-pressure pump according to claim 13, wherein the housing part comprises an extension that is at least approximately cylindrical, is oriented toward the drive shaft, and contains the cylinder bore and the receptacle.

20. **(Rejected)** The high-pressure pump according to claim 16, wherein the return spring is a helical compression spring encompassing the extension of the housing part.

21. **(Rejected)** The high-pressure pump according to claim 17, wherein the return spring is a helical compression spring encompassing the extension of the housing part.

22. **(Rejected)** The high-pressure pump according to claim 18, wherein the return spring is a helical compression spring encompassing the extension of the housing part.

23. **(Rejected)** The high-pressure pump according to claim 19, wherein the return spring is a helical compression spring encompassing the extension of the housing part.

24. **(Rejected)** The high-pressure pump according to claim 16, wherein the extension of the housing part comprises an annular groove that opens toward the drive shaft and divides the extension into an inner extension and an outer extension encompassing it; and wherein the return spring is embodied in the form of a helical compression spring contained in the annular groove.

25. **(Rejected)** The high-pressure pump according to claim 17, wherein the extension of the housing part comprises an annular groove that opens toward the drive shaft and divides the extension into an inner extension and an outer extension encompassing it; and wherein the return spring is embodied in the form of a helical compression spring contained in the annular groove.

26. **(Rejected)** The high-pressure pump according to claim 18, wherein the extension of the housing part comprises an annular groove that opens toward the drive shaft and divides the extension into an inner extension and an outer extension encompassing it; and wherein the return spring is embodied in the form of a helical compression spring contained in the annular groove.

27. **(Rejected)** The high-pressure pump according to claim 19, wherein the extension of the housing part comprises an annular groove that opens toward the drive shaft and divides the extension into an inner extension and an outer extension encompassing it; and wherein the

return spring is embodied in the form of a helical compression spring contained in the annular groove.

28. (Rejected) The high-pressure pump according to claim 9, wherein the return spring is supported at least indirectly against the support element; and wherein the pump piston is coupled to the support element in the direction of its longitudinal axis.

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IX - EVIDENCE APPENDIX

None

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X - RELATED PROCEEDINGS APPENDIX

None